



PATENT APPLICATION No. 10/020,151
ATTORNEY DOCKET No. 62792.12
(FORMERLY 031676.0332)

0-4702

DAC

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

RECEIVED
JUN 18 2004
OFFICE OF PETITIONS

In re Application Of:)	
)	
Roger S. CUBICCIOTTI)	Group Art Unit: 1645
)	
Application Number: 10/020,151)	Examiner: Jeffrey R. SNAY
)	
Filed: December 18, 2001)	Confirmation No. 7118
)	
For: MODIFIED PHYCOBILISOMES)	
AND USES THEREFORE)	

RESUBMISSION OF PETITION UNDER 37 C.F.R. § 1.181(a)
REQUESTING WITHDRAWAL OF HOLDING OF ABANDONMENT

U.S. Patent and Trademark Office
2011 South Clark Place
Customer Window
Attn: Mr. Derrick Woods
Crystal Plaza Two, Lobby, Room 1B03
Arlington, VA 22202

Dear Sir:

Applicant hereby resubmits the Petition Under 37 C.F.R. § 1.181(a) Requesting Withdrawal Of Holding Of Abandonment originally submitted on February 11, 2004, in the above-identified application. Applicant's representative was advised on June 10, 2004, by Mr. Derrick Woods of the U.S. Patent and Trademark Office's Petitions Branch that the February 11th Petition was not received nor entered into the record. Applicant respectfully submits that the February 11th Petition was indeed received by the PTO as evidenced by the enclosed copy of the appropriate post card date-stamped by the Office of Initial Patent Examination (OIPE) on that day. Accordingly, Applicant is resubmitting all paperwork originally filed on February 11, 2004, for entry into the record and respectfully requests consideration of the February 11th Petition Requesting Withdrawal of Holding Abandonment as indicated in the Notice of Abandonment mailed January 16, 2004.

No fee is believed to be required for the entry and consideration of this Resubmission and particularly, the Petition of February 11th. Nonetheless, in the event that the PTO does require a

fee to consider the February 11th Petition or to maintain the present application pending, please charge such fee to the undersigned's Deposit Account No. 50-0206.

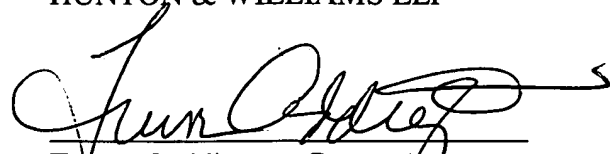
Respectfully submitted,

HUNTON & WILLIAMS LLP

June 15, 2004

Hunton & Williams LLP
Intellectual Property Department
1900 K Street, N.W., Suite 1200
Washington, DC 20006-1109
(202) 955-1500 (telephone)
(202) 778-2201 (facsimile)

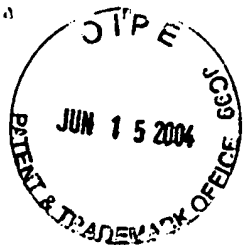
By:



Trevor Coddington, Patent Agent
Registration No. 46,633

For: Laurence H. Posorske
Registration No. 34,698

TC:cdh



RECEIVED

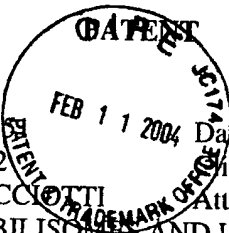
JUN 18 2004

OFFICE OF PETITIONS

COPY

☐ PROVISIONAL
☒ UTILITY

Application No.: 10/020,159 Date: February 11, 2004
Client/Matter No.: 62792.12 Inventor(s): Roger S CUBICCIOTTI
Title: MODIFIED PHYCOBILISOMES AND USES THEREFORE



☐ DESIGN
☐ PCT

The following has been received in the U.S. Patent and Trademark Office on the date stamped hereon:

- ☒ Petition Under 37 C.F.R. § 1.181(a) Requesting Withdrawal of Holding of Abandonment
- ☒ Copy of Notice of Abandonment mailed January 26, 2004
- ☒ Copy of Amendment Transmittal Sheet dated October 20, 2003
- ☒ Copy of Response to Non-Final Office Action Under 37 C.F.R. § 1.111 dated October 20, 2003
- ☒ Copy of One Drawing Sheet (Figure 1) filed October 20, 2003
- ☒ Copy of Petition for Extension of Time Under 37 CFR 1.136(a) filed October 20, 2003
- ☒ Copy of Check No. 2058364 in the amount of \$128.00
- ☒ Copy of PTO Date-stamped return receipt post card

RECEIVED 2/12/04



PATENT APPLICATION No. 10/020,151
ATTORNEY DOCKET No. 62792.12
(FORMERLY 031676.0332)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

COPY

In re Application Of:

Roger S. CUBICCIOTTI

Application Number: 10/020,151

Filed: December 18, 2001

For: MODIFIED PHYCOBILISOMES
AND USES THEREFORE

)
)
) Group Art Unit: 1645

)
) Examiner: Jeffrey R. SNAY

)
) Confirmation No. 7118

RECEIVED

JUN 18 2004

OFFICE OF PETITIONS

PETITION UNDER 37 C.F.R. § 1.181(a)
REQUESTING WITHDRAWAL OF HOLDING OF ABANDONMENT

U.S. Patent and Trademark Office
2011 South Clark Place
Customer Window, MAIL STOP PETITION
Crystal Plaza Two, Lobby, Room 1B03
Arlington, VA 22202

Dear Sir:

In response to the Notice of Abandonment mailed January 26, 2004, a copy of which is enclosed, Applicant respectfully petitions the Commissioner under 37 C.F.R. § 1.181(a) to have the holding of abandonment withdrawn. Particularly, Applicant contends that the holding of abandonment is erroneous in view of Applicant's submission of a timely Response on October 20, 2003, to the non-final Office Action mailed June 20, 2003.

The timeliness and receipt of Applicant's Response is acknowledged by the United States Patent & Trademark Office (PTO) in the enclosed copy of a post card, which was date-stamped by the Office of Initial Patent Examination on October 20, 2003. This post card clearly indicates that the Applicant filed and the PTO received on October 20, 2003, *inter alia*, a Response to Non-Final Office Action Under 37 C.F.R. § 1.111, a Petition for One Month Extension of Time, and a check to cover the requisite fees. A courtesy copy of Applicant's entire October 20, 2003, submission is enclosed.

Because the holding of abandonment is believed to be caused by a PTO oversight, no fee is believed to be required for the entry and consideration of this Petition. Nonetheless, in the

event that the PTO does require a fee to consider this Petition and/or the papers originally submitted on October 20, 2003, or to maintain the present application pending, please charge such fee to the undersigned's Deposit Account No. 50-0206.

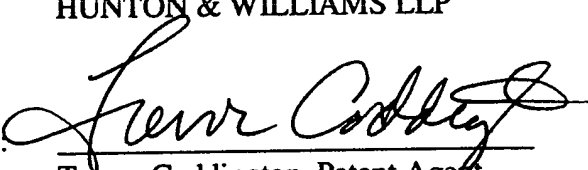
Respectfully submitted,

HUNTON & WILLIAMS LLP

February 11, 2004

Hunton & Williams LLP
Intellectual Property Department
1900 K Street, N.W., Suite 1200
Washington, DC 20006-1109
(202) 955-1500 (telephone)
(202) 778-2201 (facsimile)

By.


Trevor Coddington, Patent Agent
Registration No. 46,633
For: Laurence H. Posorske
Registration No. 34,698

TC:cdh



COPY

Notice of Abandonment

Application No.

10/020,151

Examiner

Jeffrey R. Snay

Applicant(s)

CUBICCIOTTI, ROGER S.

Art Unit

1743

- The MAILING DATE of this communication appears on the cover sheet with the correspondence address.

JUN 18 2004

This application is abandoned in view of:

1. ☒ Applicant's failure to timely file a proper reply to the Office letter mailed on 20 June 2003.
(a) ☐ A reply was received on _____ (with a Certificate of Mailing or Transmission dated _____), which is after the expiration of the period for reply (including a total extension of time of _____ month(s)) which expired on _____.
(b) ☐ A proposed reply was received on _____, but it does not constitute a proper reply under 37 CFR 1.113 (a) to the final rejection.
(A proper reply under 37 CFR 1.113 to a final rejection consists only of: (1) a timely filed amendment which places the application in condition for allowance; (2) a timely filed Notice of Appeal (with appeal fee); or (3) a timely filed Request for Continued Examination (RCE) in compliance with 37 CFR 1.114).
(c) ☐ A reply was received on _____ but it does not constitute a proper reply, or a bona fide attempt at a proper reply, to the non-final rejection. See 37 CFR 1.85(a) and 1.111. (See explanation in box 7 below).
(d) ☒ No reply has been received.
2. ☐ Applicant's failure to timely pay the required issue fee and publication fee, if applicable, within the statutory period of three months from the mailing date of the Notice of Allowance (PTOL-85).
(a) ☐ The issue fee and publication fee, if applicable, was received on _____ (with a Certificate of Mailing or Transmission dated _____), which is after the expiration of the statutory period for payment of the issue fee (and publication fee) set in the Notice of Allowance (PTOL-85).
(b) ☐ The submitted fee of \$_____ is insufficient. A balance of \$_____ is due.
The issue fee required by 37 CFR 1.18 is \$_____. The publication fee, if required by 37 CFR 1.18(d), is \$_____.
(c) ☐ The issue fee and publication fee, if applicable, has not been received.
3. ☐ Applicant's failure to timely file corrected drawings as required by, and within the three-month period set in, the Notice of Allowability (PTO-37).
(a) ☐ Proposed corrected drawings were received on _____ (with a Certificate of Mailing or Transmission dated _____), which is after the expiration of the period for reply.
(b) ☐ No corrected drawings have been received.
4. ☐ The letter of express abandonment which is signed by the attorney or agent of record, the assignee of the entire interest, or all of the applicants.
5. ☐ The letter of express abandonment which is signed by an attorney or agent (acting in a representative capacity under 37 CFR 1.34(a)) upon the filing of a continuing application.
6. ☐ The decision by the Board of Patent Appeals and Interference rendered on _____ and because the period for seeking court review of the decision has expired and there are no allowed claims.
7. ☐ The reason(s) below:

Jeffrey R. Snay
Primary Examiner
Art Unit: 1743

Petitions to revive under 37 CFR 1.137(a) or (b), or requests to withdraw the holding of abandonment under 37 CFR 1.181, should be promptly filed to minimize any negative effects on patent term.

HUNTON & WILLIAMS



INTELLECTUAL PROPERTY DEPARTMENT
HUNTON & WILLIAMS LLP
1900 K STREET, N.W.
WASHINGTON, D.C. 20006-1109

TEL 202 • 955 • 1500
FAX 202 • 778 • 2201

TREVOR CODDINGTON, PH.D.
PATENT AGENT

Direct Dial: (202) 955-1587
EMAIL: TCODDINGTON@HUNTON.COM

October 20, 2003

File No: 62792.12

RECEIVED

Confirmation No.:

711JUN 18 2004

Application Number : 10/1020,151
Applicant : Roger S. CUBICCIOTTI
Filed : December 18, 2001
Title : MODIFIED PHYCOBILISOMES AND USES THEREFORE
TC/Art Unit : 1645
Examiner: : Jeffrey R. SNAY
Docket No. : 62792.12
Customer No. : 7118

OFFICE OF PETITIONS

COPY

U.S. Patent and Trademark Office
2011 South Clark Place
Customer Window, Mail Stop Fee Amendment
Crystal Plaza Two, Lobby, Room 1B03
Arlington, Virginia 22202

Transmitted herewith is an amendment in the above-identified application. Fees have been calculated as shown below:

CLAIMS AS AMENDED						
	Claims Remaining After Amendment	Highest Number Previously Paid For	Extra	Rate		Amount
				Large Entity	Small Entity	
Number of Claims in Excess of 20	21	20	1	\$ 18.00	\$ 9.00	\$18.00
Independent Claims in Excess of 3	4	9	0	\$ 84.00	\$ 42.00	\$ 0.00
First Presentation of Multiple Dependent Claims				\$ 280.00	\$ 140.00	\$ 0.00
Extension Fee:				\$ 110.00	\$ 55.00	\$110.00
a) One Month				\$ 410.00	\$ 205.00	\$ 0.00
b) Two Months				\$ 930.00	\$ 465.00	\$ 0.00
c) Three Months				\$1450.00	\$ 725.00	\$ 0.00
d) Four Months				\$1970.00	\$ 985.00	\$ 0.00
e) Five Months						\$ 0.00
Other:						\$128.00
TOTAL FEE DUE						

- ☐ No additional fee is required.
☒ A check in the amount of \$ 128.00 is attached.
☐ Charge \$ _____ to Deposit Account No. 50-0206.

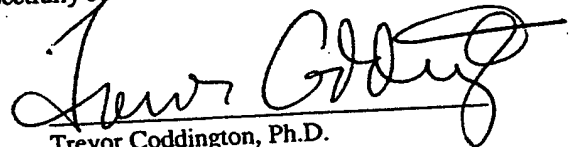
October 20, 2003

Page 2

☒ Charge any additional fees or credit any overpayment to Deposit Account No. 50-0206.
Small Entity Status Claim: ☐ is hereby requested. ☐ is of record in this application.

Respectfully submitted,

By:



Trevor Coddington, Ph.D.
Patent Agent
Registration No. 46,633

TC/cdh



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application Of:

Roger S. CUBICCIOTTI

Application Number: 10/020,151

Filed: December 18, 2001

For: MODIFIED PHYCOBILISOMES
AND USES THEREFORE

)
)
) Group Art Unit: 1645

)
) Examiner: Jeffrey R. SNAY

)
) Confirmation No. 7118

REPLY TO NON-FINAL OFFICE ACTION UNDER 37 C.F.R. § 1.111

U.S. Patent and Trademark Office
2011 South Clark Place
Customer Window, Mail Stop Fee Amendment
Crystal Plaza Two, Lobby, Room 1B03
Arlington, VA 22202

COPY

Dear Sir:

In response to the Office Action of June 20, 2003, please amend the above-identified application as follows:

Amendments to the specification begin on page 2 of this Reply.

Amendments to the claims are reflected in the listing of claims, which begins on page 4 of this Reply.

In sum, claims 51 and 53 are currently amended.

Claims 50, 52, and 54 remain unchanged.

Claims 59-74 have been added.

Claims 1, 11, 15, 22, 31, 43-49, and 55 have been withdrawn from consideration.

Claims 2-10, 12-14, 16-21, 23-30, 32-42, and 56-58 have been canceled.

Accordingly, claims 50-54 and 59-74 are currently pending.

Remarks/Arguments begin on page 8 of this Reply.

AMENDMENTS TO THE SPECIFICATION:

Please add the following new paragraphs after the paragraph ending at page 7, line 18:

BRIEF DESCRIPTION OF THE DRAWINGS

For a more complete understanding of the invention, the objects and advantages thereof, reference is now made to the following descriptions taken in connection with the accompanying drawings in which:

Fig. 1 illustrates a phycobilisome-based biotransducer according to a preferred embodiment of the instant invention.

Please replace the paragraph beginning at page 51, line 28, with the following paragraph:

Figure 1 illustrates a phycobilisome-based biotransducer 100 according to a ~~[[A]]~~ particularly preferred embodiment of the instant invention. ~~is a phycobilisome-based~~ Phycobilisome-based biotransducer 100 comprising comprises a phycobilisome or phycobilisome conjugate 110 functionally coupled to a transducer 120. Typically, the phycobilisome of a phycobilisome-based biotransducer is operatively associated with, attached to, immobilized at, packaged with, or otherwise structurally or functionally inseparable from the transducer. A phycobilisome-based biotransducer can also be a two-component (or multi-component) product or system comprising a transducer component and a disposable, replaceable, reusable or upgradeable phycobilisome-containing cartridge, module, slide, disk, film, layer, fiber, connector, attachment or part that serves as an interface between the phycobilisome and the transducer. In this case, the phycobilisome-containing component is physically separable from the transducer component but must be inserted, attached, rejoined or replaced to form the functionally coupled two-component system capable of performing the intended function. The functionally coupled transducer converts an activity, energy or property of the biological or biomimetic molecule(s) (e.g., the phycobilisome(s) or phycobilisome conjugate(s)) to useful work or information or a detectable signal. Transducers of the instant invention may be electronic, electrical, optical, optoelectronic, electromechanical, electrochemical, photochemical, thermal or acoustical devices and include, without limitation, optical fibers and

waveguides, evanescent waveguides, light-addressable potentiometric devices, photovoltaic devices, photoelectric and photochemical and photoelectrochemical cells, conducting and semiconducting substrates, molecular and nanoscale wires, gates and switches, charge-coupled devices, photodiodes, electrical and optoelectronic switches, imaging and storage and photosensitive media (e.g., films, polymers, tapes, slides, crystals and liquid crystals), photorefractive devices, displays, optical disks, digital versatile disks, amperometric and potentiometric electrodes, ion-selective electrodes, field effect transistors, interdigitated electrodes and other capacitance-based devices, piezoelectric and microgravimetric devices, surface acoustic wave and surface plasmon resonance devices, thermistors, and the like. These and other transducers, transduction principles and related devices are known to those of skill in the art (e.g., Taylor, RF (1990) Biosensors: Technology, Applications, and Markets, Decision Resources, Inc., Burlington, MA.), as are techniques for coupling artificial photosynthesis to electrical, electronic and optoelectronic devices (e.g., Gust et al. (1994)). Phycobilisome properties, energies or activities that can be functionally coupled to a transducer include, without limitation, mass, photon absorption or emission, specific binding, catalytic and other signal-generating activities using phycobilisome conjugates, reconstitution and dissociation reactions, and energy transfer to or from molecular species which are functionally coupled to the phycobilisome or phycobilisome complex (e.g., by electronic coupling, preferably by intimate intermolecular proximity and more preferably by covalent attachment, or alternatively by mass or energy transfer accompanying noncovalent interactions such as specific binding).

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (Withdrawn)

2-10. (Canceled)

11. (Withdrawn)

12-14. (Canceled)

15. (Withdrawn)

16-21. (Canceled)

22. (Withdrawn)

23-30. (Canceled)

31. (Withdrawn)

32-42. (Canceled)

43-49. (Withdrawn)

50. (Original) A system for processing a light signal comprising:
conversion means for receiving ultraviolet or visible light and directionally transferring
light energy of said light and
processing means for receiving and processing said directionally transferred light energy.
51. (Currently Amended) The system of claim 50, wherein said processing means comprises
an optical fiber operative to transmit said light ~~signal~~ energy.
52. (Original) The system of claim 50, wherein said processing means comprises a
photosensor.
53. (Currently Amended) The system of claim 50, wherein said ~~directionally transferred light~~
~~energy comprises a photon~~ conversion means comprises a supramolecular light-absorbing
structure.
54. (Original) The system of claim 50, wherein said conversion means comprises a
phycobilisome.
55. (Withdrawn)
- 56-58. (Canceled)
59. (New) The system of claim 50, wherein said processing means comprises a waveguide.
60. (New) The system of claim 50, wherein said processing means comprises an
optoelectronic device.

61. (New) A system for processing electromagnetic radiation comprising:
conversion means for receiving electromagnetic radiation and converting said
electromagnetic radiation into light energy having a desired property, wherein said conversion
means includes a structure comprising a phycobilisome; and
processing means for receiving and processing said light energy.
62. (New) The system of claim 61, wherein said processing means comprises a
phycobilisome.
63. (New) The system of claim 61, wherein said processing means comprises an optical
fiber.
64. (New) The system of claim 61, wherein said processing means comprises a waveguide.
65. (New) The system of claim 61, wherein said processing means comprises an
optoelectronic device.
66. (New) The system of claim 61, wherein said processing means comprises a photosensor.
67. (New) An environmentally responsive sensor comprising the system of claim 61.
68. (New) The system of claim 61, wherein said electromagnetic radiation comprises
ultraviolet or visible light.
69. (New) The system of claim 68, wherein said light energy is red-shifted relative to the
received electromagnetic radiation.
70. (New) The system of claim 61, further comprising a transducer.

71. (New) A biotransducer comprising:
a transducer, and
a supramolecular light-absorbing structure functionally coupled to said transducer,
wherein said supramolecular light-absorbing structure includes a phycobilisome.
72. (New) The biotransducer of claim 71, wherein said supra molecular light-absorbing structure is functionally coupled to a molecular species selected from the group consisting of: ligands, receptors and signal generating molecules.
73. (New) A biotransducer comprising:
a transducer, and
a supramolecular light-absorbing structure functionally coupled to said transducer,
wherein said supramolecular light-absorbing structure has an intrinsic structure adapted to receive ultraviolet or visible light and directionally transfer light energy of said light.
74. (New) The biotransducer of claim 73, wherein said supramolecular light-absorbing structure comprises at least one phycobiliprotein-containing rod.

REMARKS

Claims 50-54 and 59-72 are currently pending. Applicant respectfully requests that the Examiner reconsider all rejections in the outstanding Office Action in view of the foregoing amendments and the following remarks.

1. Drawings

The Office Action requests that Applicant furnish a drawing under 37 C.F.R. § 1.81 in order to depict the claimed system. Applicant submits herewith a drawing and corresponding amendments to the specification in order to better facilitate understanding of the invention.

2. Currently Amended Claims 51 and 53

Dependent claims 51 and 53 have been amended to better describe the claimed invention. Particularly, the term "light signal" in claim 51 has been changed to "light energy" to be consistent with the antecedent basis established in original independent claim 50. Claim 53 has been amended to replace the limitation "directionally transferred light energy comprises a photon" with "conversion means comprises a supramolecular light-absorbing structure." Support for this amendment is found at least at page 6, line 10 and page 12, line 13. No new matter has been added by these amendments.

3. 35 U.S.C. § 102

Claims 50-53 are rejected under 35 U.S.C. 102(b), as allegedly being anticipated by U.S. Patent No. 5,037,615 to Kane. Office Action, page 3. Particularly, the Office Action alleges that in accordance with the specification the "conversion means" recited in independent claim 50 operates to excite a first fluorophore, which excitation emission effects excitation of a second acceptor fluorophore. *Id.* Since the tethered energy transfer pair of fluorophores in Kane operates in this manner, the indicator composition of Kane is urged to fully anticipate the claimed conversion means. *Id.* Applicant respectfully disagrees and traverses this rejection on the following grounds.

For convenience, original claim 50 is repeated as follows.

50. A system for processing a light signal comprising:
conversion means for receiving ultraviolet or visible light and
directionally transferring light energy of said light and
processing means for receiving and processing said directionally
transferred light energy.

When an element is claimed using language falling under the scope of 35 U.S.C. § 112, 6th paragraph (often broadly referred to as means- or step-plus-function language), the specification must be consulted to determine the structure, material, or acts corresponding to the function recited in the claim. M.P.E.P. § 2111.01 (citing *In re Donaldson*, 16 F.3d 1189, 29 USPQ2d 1845 (Fed. Cir. 1994)). The application of a prior art reference to a means- (or step-) plus-function limitation requires that the prior art element perform the identical function specified in the claim. M.P.E.P. § 2182. However, if a prior art reference teaches identity of function to that specified in a claim, then under *Donaldson* an examiner carries the initial burden of proof for showing that the prior art structure or step is the same as or equivalent to the structure, material or acts described in the specification, which has been identified as corresponding to the claimed means- (or step-) plus-function. *Id.* (emphasis in original). In order to make a *prima facie* case of equivalence, the examiner must show that the prior art element (i) performs the function specified in the claim, (ii) is not excluded by any explicit definition provided in the specification for an equivalent, and (iii) is an equivalent of the means- (or step-) plus-function limitation. See M.P.E.P. § 2183. One factor that will support a conclusion that the prior art element is an equivalent is: the prior art element is a structural equivalent of the corresponding element disclosed in the specification. *Id.* (citing *In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990)). That is, the prior art element performs the function specified in the claim in substantially the same manner as the function is performed by the corresponding element described in the specification. *Id.* (emphasis added).

The Examiner's assertion that the recited conversion means operates in the same manner as, and hence is a structural equivalent of, the tethered energy transfer pair of fluorophores in Kane is unsoundly based. As described in Applicant's specification at page 6, line 10, the claimed "conversion means" preferably comprises a phycobilisome. A phycobilisome is defined as a supramolecular light-absorbing structure comprising at least one phycobiliprotein-containing rod. Applicant's Specification, page 8, lines 22-23. Phycobilisomes contain two or more phycobiliproteins specifically connected by one or more linker polypeptides, where the two or more phycobiliproteins are in a particular orientation dictated by the linker polypeptide, with the orientation typically facilitating energy transfer between the phycobiliproteins. *Id.* at page 8, line 28 to page 9, line 2. Kane is directed toward a fluorescence energy transfer indicator that

includes a membrane or plug 19 having a tethered pair fluorescence energy transfer indicator comprising a fluorescent energy donor and a colorimetric indicator acceptor. *See Kane*, abstract and col. 5, 11. 47-58. Kane teaches using a small molecule fluorescent dye as the fluorescent energy donor. *See Id.* at column 4, lines 44-66. No teaching is provided with respect to the use of supramolecular structures such as phycobilisomes. Clearly, Kane's fluorescent dye has a substantially different structure than that of a phycobilisome, *i.e.*, a supramolecular light-absorbing structure comprising at least one phycobiliprotein-containing rod.

Applicant notes that Kane's tethered pair fluorescence energy transfer indicator does not directionally transfer light energy in substantially the same way as a phycobilisome. Directional energy transfer within phycobilisomes occurs from one or more "sensitizing species" to a terminal acceptor. Applicant's Specification, page 7, line 23-24 (emphasis added). The light-harvesting properties of phycobilisomes depend on an intrinsic structural and functional "sidedness," meaning that photons are collected from one "side" (*i.e.*, peripheral rod(s)) and re-emitted from a second "side" (*i.e.*, the terminal acceptor). *Id.* at page 49, lines 23-29. This distinct and useful property is absent in Kane. For example, Kane's fluorescent dye *per se* lacks any type of intrinsic directional energy transfer property, as it is well understood that a dye fluorophore can emit a photon in any direction spontaneously.

Claims 51-53 are not anticipated by Kane at least because they depend from independent claim 50.

Applicant respectfully submits that the instant rejection is improper and requests that the Examiner withdraw the rejection of claims 50-53.

4. 35 U.S.C. § 103

Claim 54 is rejected under 35 U.S.C. § 103(a), as allegedly being unpatentable over U.S. Patent No. 4,857,474 to Waterbury *et al.* ("Waterbury") in view of U.S. Patent No. 4,707,454 to Hendrix. Office Action at page 4. Particularly, the Office Action asserts that Waterbury teaches or suggests all the limitations of claim 54 except for the particular optical structure utilized to produce the emission spectra of phycobilisomes. *Id.* In an attempt to cure such a deficiency, Hendrix is introduced as disclosing an apparatus suited to illuminating and monitoring fluorescent emissions for phycobiliproteins, which includes a light source and detector

communicating with the fluorescing material via optical fibers. *Id.* at page 5. Applicant respectfully disagrees and traverses this rejection on the following grounds.

Waterbury, either taken alone or in combination with Hendrix, fails to teach or suggest a "conversion means [comprising] a phycobilisome" as recited in claim 54. Waterbury provides a group of phycobiliproteins, *i.e.*, the constituents of phycobilisomes, useful as fluorescent moieties in conjugates. Waterbury, col. 4, ll. 33-37 and Example 1 at col. 7, line 45 to col. 10, line 62. Hendrix teaches fluorescent chlorophyll-labeled assay reagents. *See* Hendrix, abstract. Neither reference teaches the use of intact phycobilisomes (described in the instant specification at page 8, line 28 to page 9, line 2) as a conversion means for receiving ultraviolet or visible light and directionally transferring light energy of said light.

Applicant respectfully submits that the instant rejection is improper and requests that the Examiner withdraw the rejection of claim 54.

4. New Claims 59-74

Claims 59-74 have been added to better describe the claimed invention. Support for these claims can be found in Applicant's specification at least at page 8, lines 22-29; page 16, lines 20-29; and page 49, lines 23-29. No new matter has been added by these new claims.

New claims 59 and 60 are patentable over the cited art at least because they depend from independent claim 50. *See* Remarks §3, *supra*.

New independent claims 61 and 71 respectively recite a "conversion means includes a structure comprising a phycobilisome" and a "supramolecular light-absorbing structure includes a structure comprising a phycobilisome." Applicant respectfully submits that the cited references, either taken alone or in combination, fail to teach or suggest the use of intact phycobilisomes. *See* Remarks §3, *supra*. Accordingly, independent claims 61 and 71, and all claims dependent therefrom, are patentable over the cited art.

New independent claim 73 is provided as follows.

73. A biotransducer comprising:
a transducer, and
a supramolecular light-absorbing structure functionally coupled to said transducer, wherein said supramolecular light-absorbing structure has an intrinsic structure adapted to receive ultraviolet or visible light and directionally transfer light energy of said light. (emphasis added).

Applicant respectfully submits that the cited references, either taken alone or in combination, fail to teach a "supramolecular light-absorbing structure [having] an intrinsic structure adapted to receive ultraviolet or visible light and directionally transfer light energy of said light" as recited in claim 73. *See* Remarks §3, *supra*. Accordingly, independent claim 73 and claim 74, which is dependent therefrom, are patentable over the cited art.

CONCLUSION

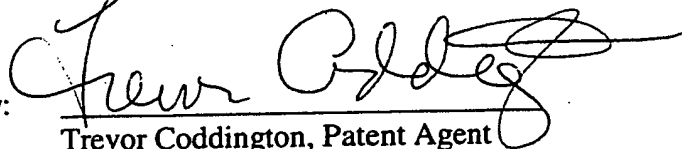
Applicant respectfully submits that this application is in condition for allowance, and such disposition is earnestly solicited. Should the Examiner believe anything further is desirable in order to place the Application in even better condition for allowance, the Examiner is invited to contact the Applicant's undersigned representative.

Applicant is concurrently submitting herewith a Request for a One-Month Extension of Time and the corresponding requisite fee for the entry of this Reply. In the event that a variance exists between the fee submitted and that required by the U.S. Patent and Trademark Office to enter this Reply or to maintain the present application as pending, please charge or credit such variance to the undersigned's Deposit Account No. 50-0206.

Respectfully submitted,

HUNTON & WILLIAMS LLP

By:



Trevor Coddington, Patent Agent
Registration No. 46,633

For: Laurence H. Posorske
Registration No. 34,698

October 20, 2003

Hunton & Williams LLP
Intellectual Property Department
1900 K Street, N.W., Suite 1200
Washington, DC 20006-1109
(202) 955-1500 (telephone)
(202) 778-2201 (facsimile)

TC:cdh

COPY

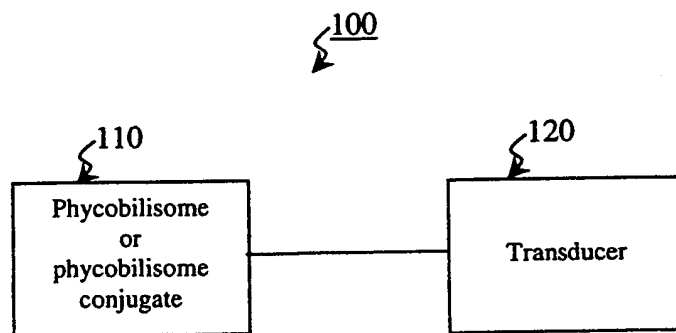
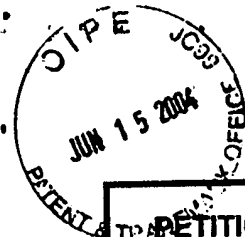


FIG. 1



PETITION FOR EXTENSION OF TIME UNDER 37 CFR 1.136(a)	Attorney Docket No.: 62792.12
---	---

In re Application Of **Roger S. CUBICCIOTTI**
Application Number **10/020,151**
Filed **December 18, 2001**
For **MODIFIED PHYCOBILISOMES AND USES THEREFORE**
Group Art Unit **1645**
Examiner **Jeffrey R. SNAY**

COPY

This is a request under the provisions of 37 CFR 1.136(a) to extend the period for filing a response in the above-identified application.

The requested extension and appropriate fee is as follows:

	Large Entity	Small Entity	Amount
<input checked="" type="checkbox"/> One Month	\$ 110.00	\$ 55.00	\$110.00
<input type="checkbox"/> Two Month	\$ 420.00	\$ 210.00	\$
<input type="checkbox"/> Three Month	\$ 950.00	\$ 475.00	\$
<input type="checkbox"/> Four Month	\$1480.00	\$ 740.00	\$
<input type="checkbox"/> Five Month	\$2010.00	\$1005.00	\$

- ☒ Applicant claims small entity status. See 37 CFR 1.27.
☒ A check in the amount of the fee is enclosed.
☐ Payment by credit card. Form PTO-2038 is attached.
☒ The Commissioner is hereby authorized to charge any fees which may be required, or credit any overpayment to Deposit Account No. 50-0206. A duplicate of this sheet is attached.

I am the ☐ applicant/inventor.
☐ assignee of record of the entire interest. See 37 CFR 3.71
Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96).;
☐ attorney or agent of record.
☒ attorney or agent under 37 CFR 1.34(a).
Registration number if acting under 37 CFR 1.34(a). **46,633**

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

October 20, 2003

Date


Signature

Trevor Coddington, Ph.D., Patent Agent

Typed or Printed Name

46,633

Registration Number (if applicable)

Note: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.

☒ *Total of 1 form is submitted.

HUNTON & WILLIAMS

CHECK NO. 2058364

INV. DATE	INVOICE NO.	CLIENT/MATTER NO.	DESCRIPTION	AMOUNT
10/20/03	PT01020	62792 000012	ADDITIONAL CLAIMS FEE + 1 MONTH EXTENSION OF TIME	128.00
COPY				\$128.00

PLEASE DETACH AND RETAIN THIS PORTION FOR YOUR RECORDS

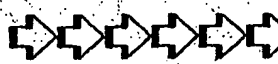
VERIFY THE AUTHENTICITY OF THIS MULTI-TONE SECURITY DOCUMENT. CHECK BACKGROUND AREA CHANGES COLOR GRADUALLY FROM TOP TO BOTTOM

HUNTON & WILLIAMS
1900 K STREET, N.W.
WASHINGTON, D.C. 20006-1109
TEL 202-951-1500

SunTrust
Greater Washington & Maryland
68-270
550

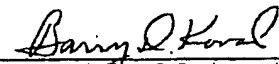
CHECK NO. 2058364

DATE	CHECK AMOUNT
10/20/03	*****\$128.00

PAY  **ONLY** **128.00**
ONE HUNDRED TWENTY-EIGHT DOLLARS AND 00 CENTS *****

TO THE ORDER OF: COMMISSIONER OF PATENTS AND TRADEMARKS

VOID AFTER 90 DAYS


AUTHORIZED SIGNATURE

2058364 055002707 702290769



COPY

PATENT

☐ PROVISIONAL
☒ UTILITY

☐ DESIGN
☐ PCT

Application No.: 10/020,151

Date: October 20, 2003

Client/Matter No.: 62792.12

Client: Martek Biosciences Corp.

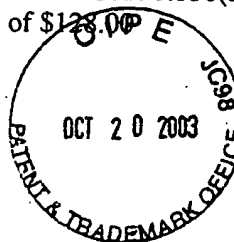
Inventor(s): Roger S. CUBICCIOTTI

Atty/Sec.: TC:cdh

Title: MODIFIED PHYCOBILISOMES AND USES THEREFORE

The following has been received in the U.S. Patent and Trademark Office on the date stamped hereon:

- ☒ Amendment Transmittal Sheet
- ☒ Response to Non-Final Office Action Under 37 C.F.R. § 1.111
- ☒ One Drawing Sheet (Figure 1)
- ☒ Petition for One Month Extension of Time Under 37 CFR 1.136(a)
- ☒ Check No. 2058364 in the amount of \$128.00



RECEIVED

10/21/03